Space Weather Forecast

Issued on Sunday 30 March 2025 at 13:29 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor/Moderate (R1/R2) radio blackouts Expected. Active electron fluence.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity was Moderate, with three Moderate-class flares, peak was at 29/2300 UTC. There are six regions on the current disc. A long, large and complex spot region resides in the far southeast. A large amount of magnetic looping continues to be observed and the region has been associated with two Moderate-class flares with associated coronal mass ejections. A spot spanning centre disk continues a slow decline, but is also responsible for a Moderate-class flare and potential Earth-directed coronal mass ejection, though confidence is low. All other active regions are magnetically simple.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of gradual waning fast winds. The solar wind speed fell from Elevated back to slightly Elevated. The Interplanetary Magnetic Field was at weak levels. The north-south component varied weakly. The net result of the above solar wind measures was for Quiet to Unsettled (Kp0-3) geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate-class flares are Expected, with a slight chance of Strong-class flares.

Solar Wind / Geomagnetic Activity: A possible faint Earth-directed coronal mass ejection from 29 Mar may arrive on days 3 or 4 (01 or 02 Apr). The current fast wind continues to wane and lose influence. Earth may connect with another coronal hole fast wind late day 2 or day 3 (31 or 01 April). Solar winds are therefore expected to fall back to slow-ambient speeds before rising to Elevated sometime between late day 2 into day 4 due to a combination of fast wind and possible coronal mass ejection effects.

Quiet to Unsettled geomagnetic activity is most likely. A chance of Active intervals and a slight chance of G1/Minor storm periods on days 3 and 4 (01/02 Apr) as Earth connects with fast winds and/or the coronal mass ejection from 29th.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Energetic Particles / Solar Radiation: There is a chance of a solar radiation storm occurring later day 1 due to recent enhancements above background, with a slight chance thereafter should any further notable flares occur.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	80	80	80	80
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	40	20	20	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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